

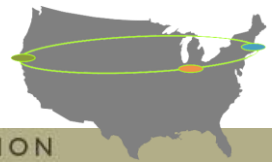


EXPERIENCE. **RESULTS.**

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NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE PRESENTATION

CSC and the Connecting for Health Team

NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE DEMONSTRATION

Robert Wah, MD

Chief Medical Officer, CSC North American Public Sector



Department of Health & Human Services
Office of the National Coordinator for
Health Information Technology

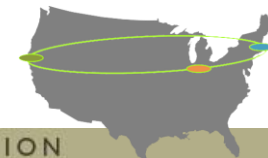


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NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE PRESENTATION

“I need access to my healthcare information wherever I am.”



“What do we know about this patient’s medical history?
Several things could be going on.”



“We have reports of a spike in the incidence of this cluster of symptoms in two other counties.”



Department of Health & Human Services
Office of the National Coordinator for
Health Information Technology

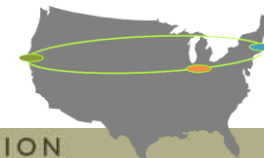


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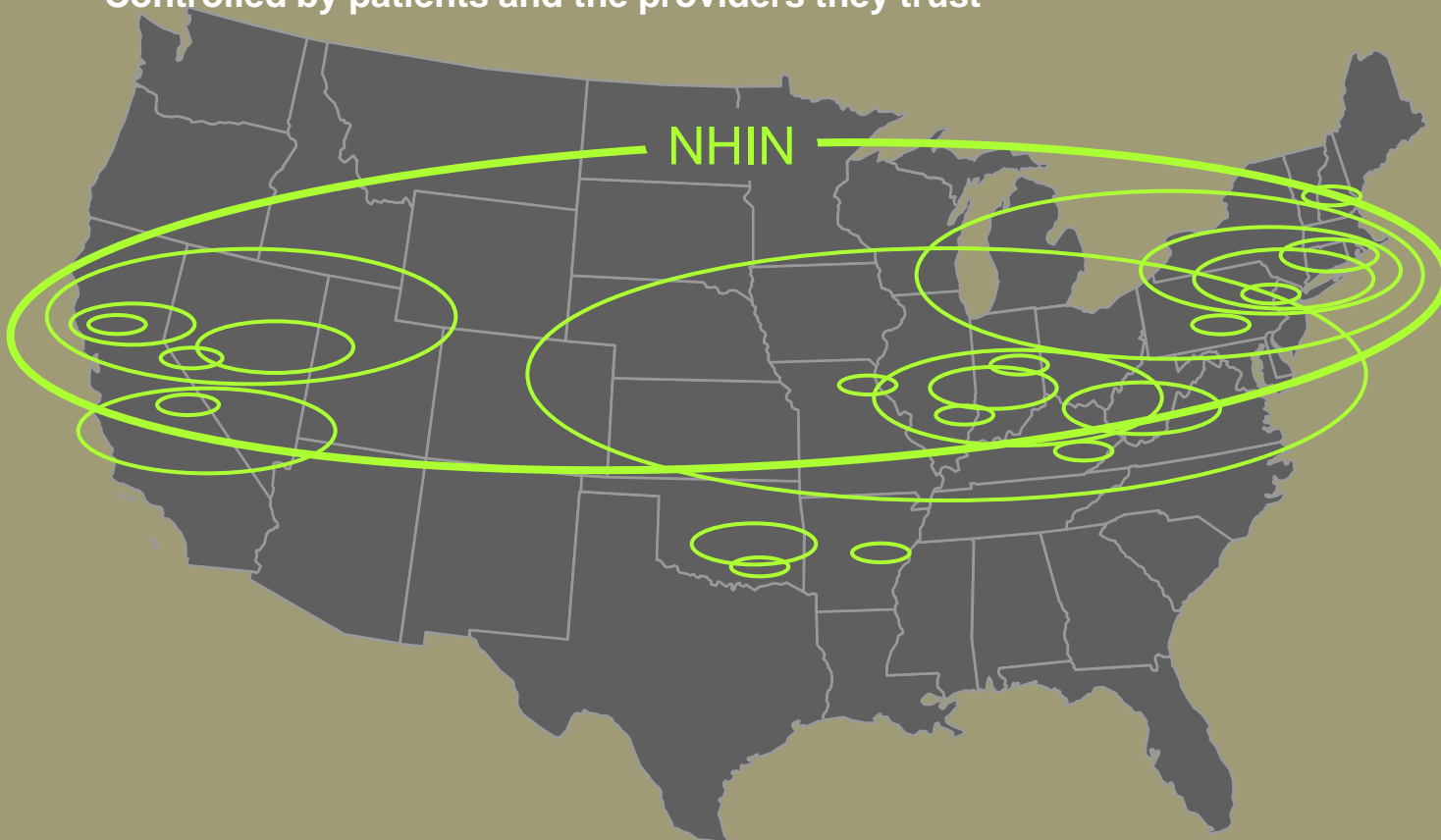
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The CSC Connecting for Health Nationwide Health Information Network (NHIN)

- An open, federated and decentralized “network of networks”
 - Connecting regional and non-geographic communities and services
- Protected by sound policies for how data is shared
 - Controlled by patients and the providers they trust



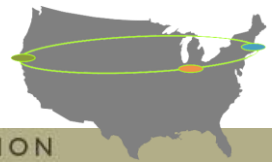


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A Flexible Approach That Meets the Objectives of the Nation's Strategic Framework for Health IT

- Improve quality of care
- Reduce medical errors
- Lower costs
- Empower patients
- Improve public health information monitoring



Patient access to personal records



Portable electronic health records



Better biosurveillance of outbreaks and alerts about threats



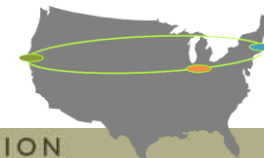


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NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE PRESENTATION

Our Approach

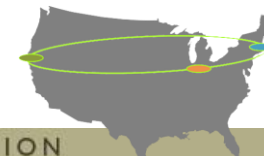


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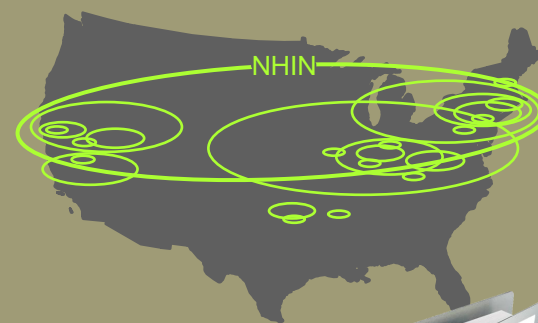
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Definitions

Nationwide Health Information Network

- Network of subnetwork organizations



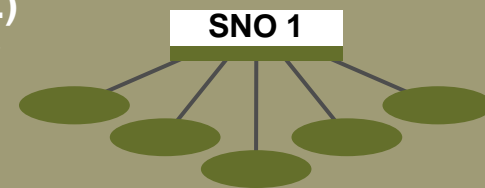
Common Framework

- A set of specific, critical tools, including:
 - Technical standards for exchanging clinical information
 - Explicit policies for how information is handled
 - Uniform methods for linking information accurately and securely



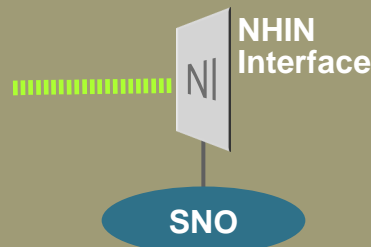
Subnetwork Organization (SNO)

- A group of entities (e.g., clinics, hospitals, labs, etc.) that agree to exchange clinical data with each other using shared policies and technological standards
- Regional health information organizations (RHIOs) and nongeographic networks (e.g., DOD, VA, Kaiser, etc.)



NHIN Interface

- Common service for messages
- Encapsulates secure, reliable, audited, standards-based messages,



Secure Internet

The Common Framework



NHIN Interface



Gateway



Data Repository



Record Exchange Service



Record Locator Service

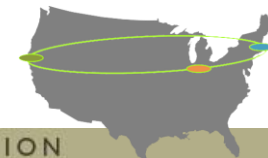


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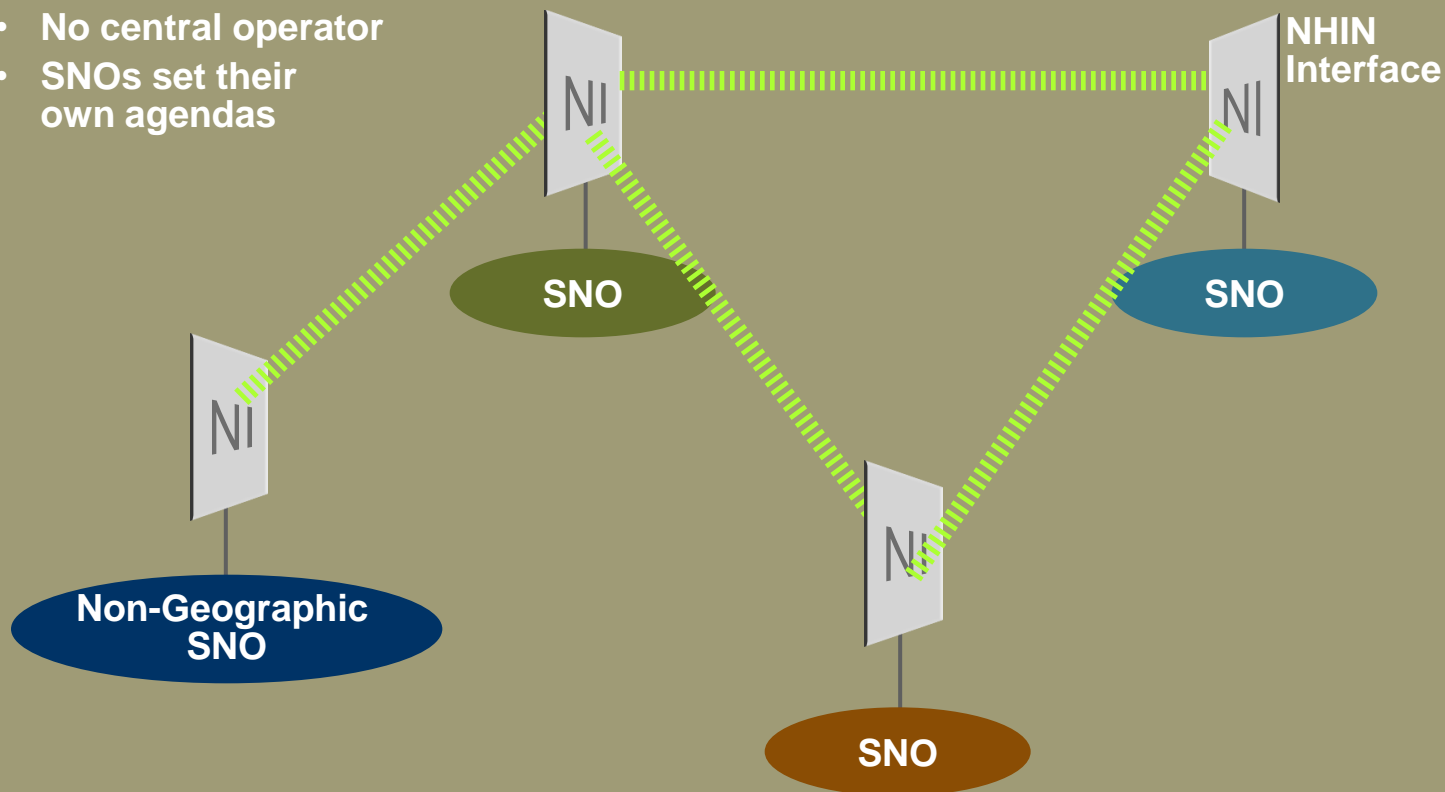
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The Connecting for Health Team NHIN Architecture

- Recognizes that diverse local or regional networks need to be connected to each other and to non-geographic data sources
- Brings interoperability without mandating extensive IT change
- No centralized data
- No central operator
- SNOs set their own agendas



 The Common Framework



Inter-SNO Bridge



Gateway



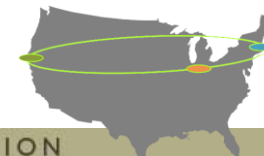
Data Repository



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Record Locator Service



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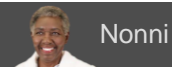
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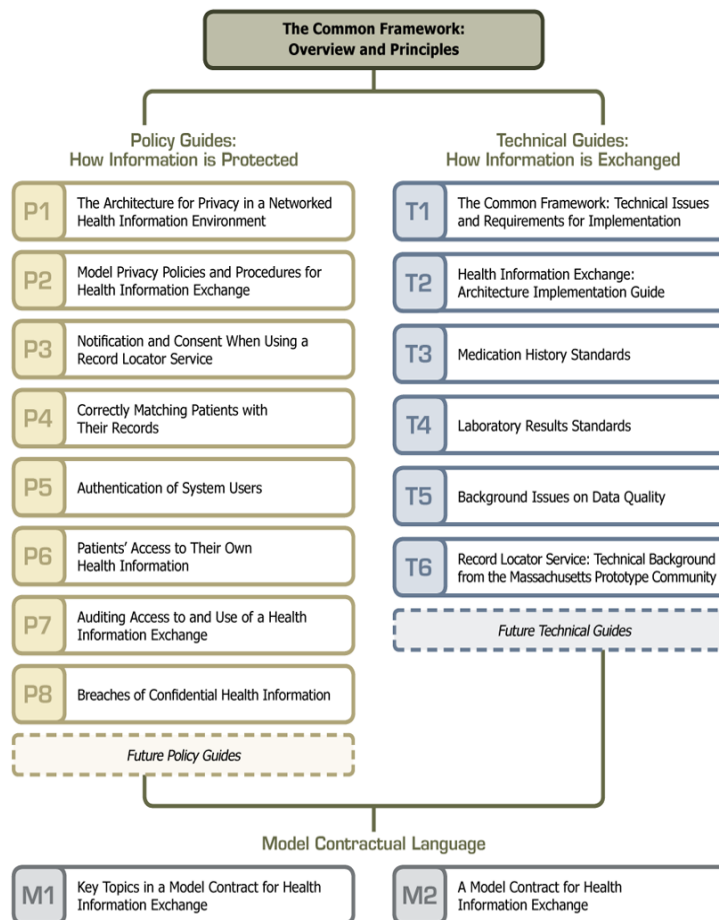
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The Connecting for Health Common Framework Policies and Standards



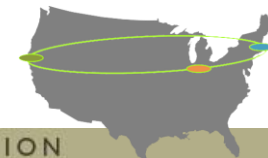


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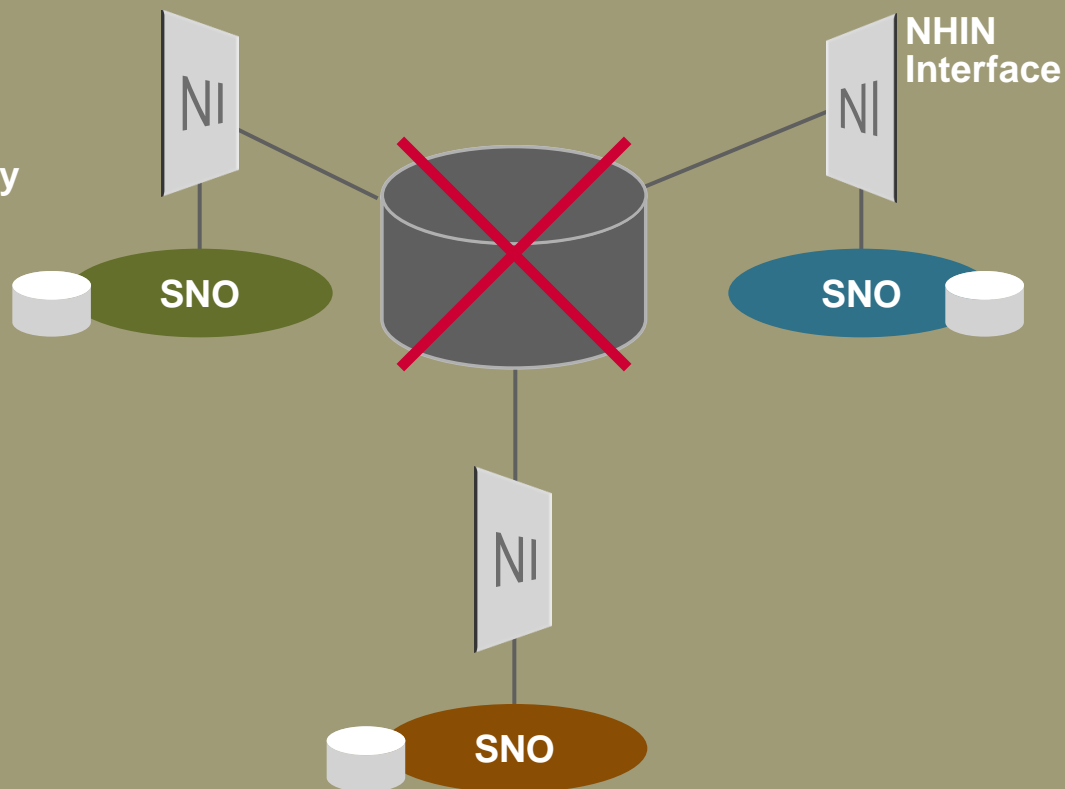
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The Connecting for Health Common Framework Technology Principles

- Make it “Thin”
- Avoid “rip and replace”
- Separate applications from the network
- Decentralization
- Federation
- Flexibility
- Privacy and security
- Accuracy



Secure Internet

The Common
Framework



Inter-SNO
Bridge



Gateway



Data
Repository



Record Exchange
Service



Record Locator
Service

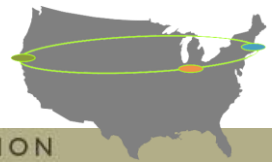


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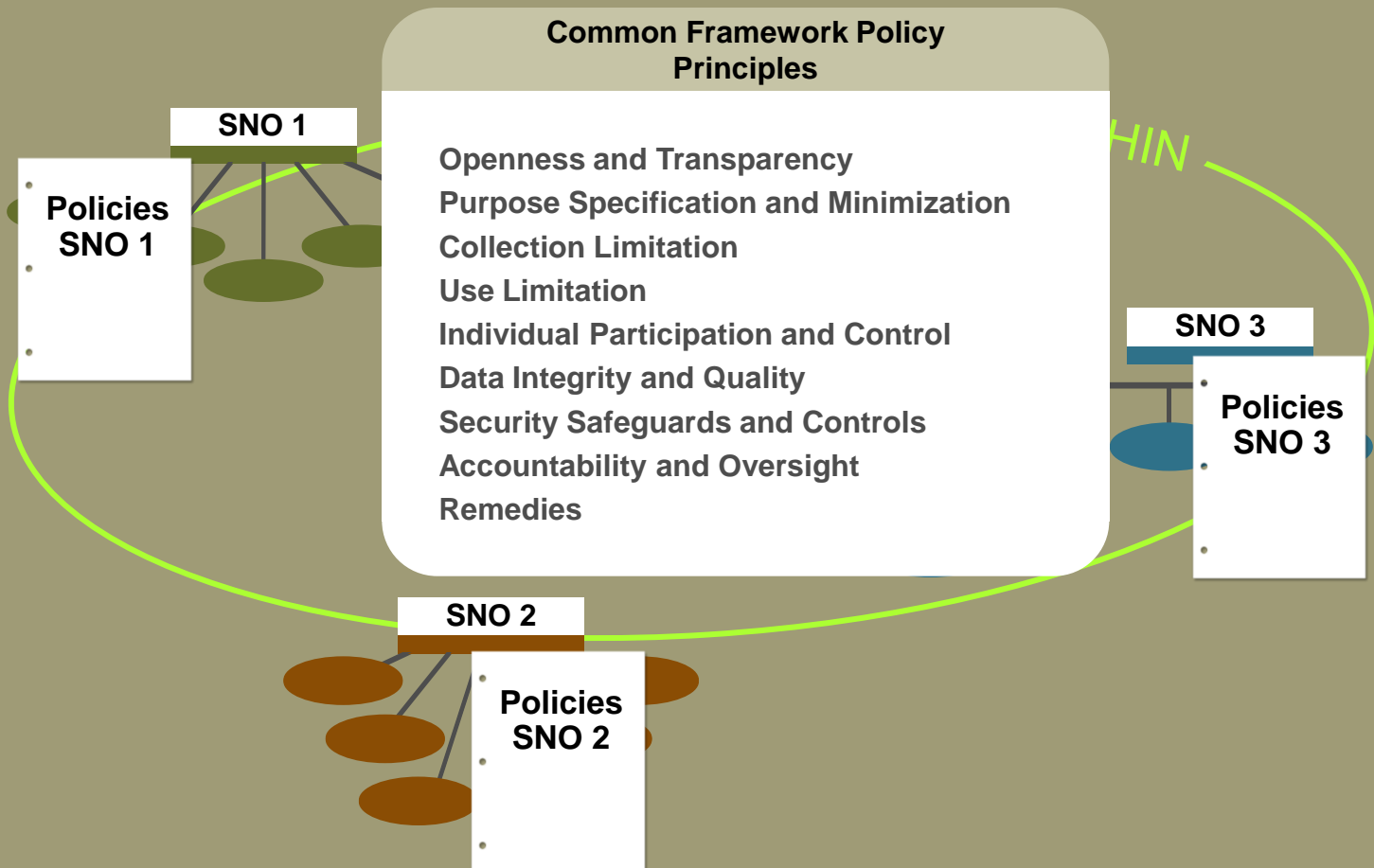
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The Connecting for Health Common Framework Principles



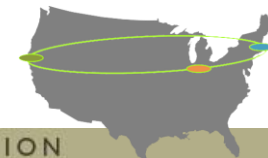


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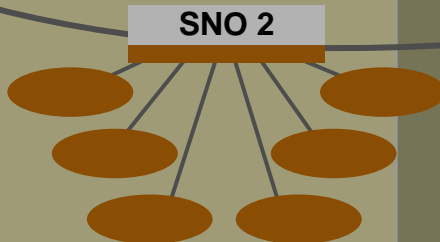
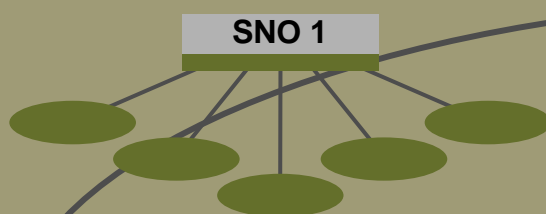
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Dominant and Robust Data, Messaging, and Transport Standards



Messages:

HL7: Dominant Health Information
Exchange Standard

v3.0

v2.5

v2.4

v2.3.1

v2.3

NCPDP

Pharmacy

Electronic Prescription

ASC X12

Administrative

HIPAA

Data:

HL7 RIM 2-Based Vocabulary Domains

LOINC

SNOMED-CT

ICD9

CPT

Metadata:

XML Schema

Web Services:

SOAP 1.1

WSDL 1.1

UDDI 2.0

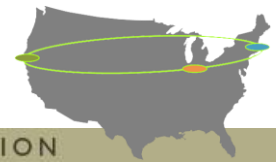
WS-I Basic Profile

Transport:

HTTPS Encryption

SNO 3





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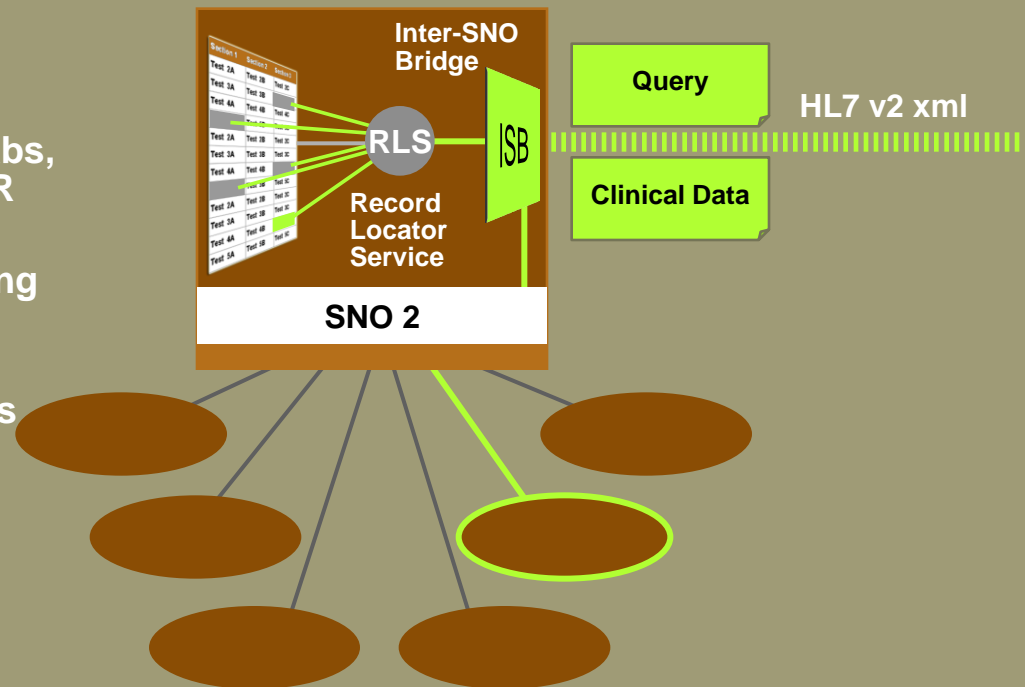
Few Technical Services Requirements

Record Locator Service (RLS)

- Authorized lookup of patient data locations
- Index to data locations; NO clinical data

Inter-SNO Bridge (ISB)

- Implementation of the NHIN interface (NI)
- Connects diverse data sources, networks, and data types (including labs, medication history, PHR data, immunizations)
- Avoids replacing existing “edge” systems
- Formats the data into standard HL7 messages
- Transmits data securely



Secure Internet

The Common Framework



Inter-SNO Bridge



Gateway



Data Repository



Record Exchange Service



Record Locator Service

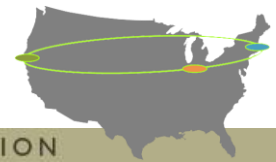


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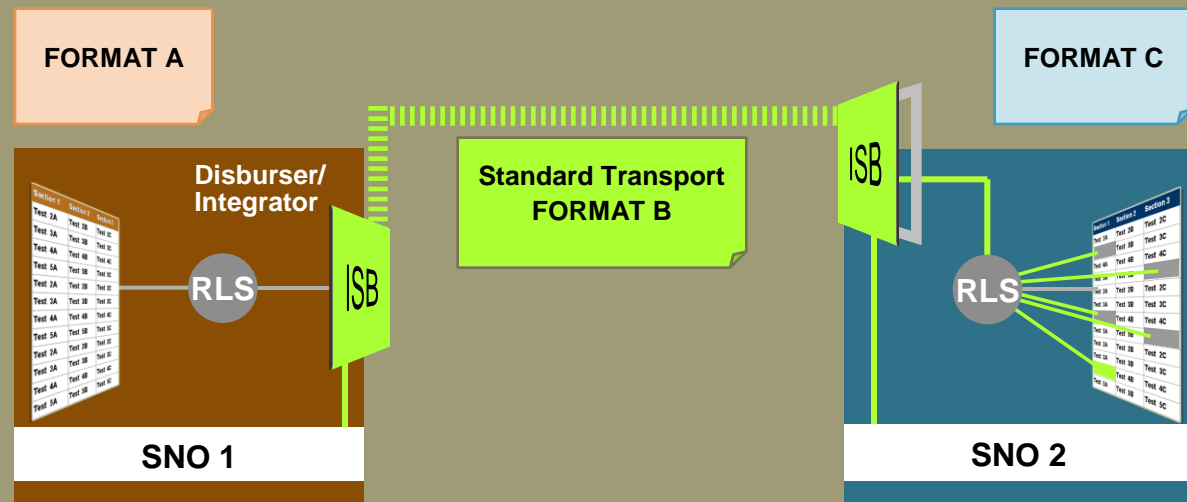
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Inter-SNO Communication Using the Common Framework

- A SNO queries other SNOs when it knows:
 - An institution where the patient received care
 - A region where the patient received care
- Queries are sent to the local RLS and ISB
- Local ISB converts query to common standard and sends to remote ISBs
 - Same query format for all remote SNOs, needing only location of other ISBs
- Remote ISB looks up patient data locations in remote RLS
- Remote ISB retrieves data, converts to common standard, and transmits to requesting ISB if appropriate authorizations are in place



Secure Internet

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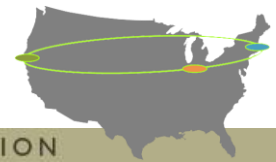


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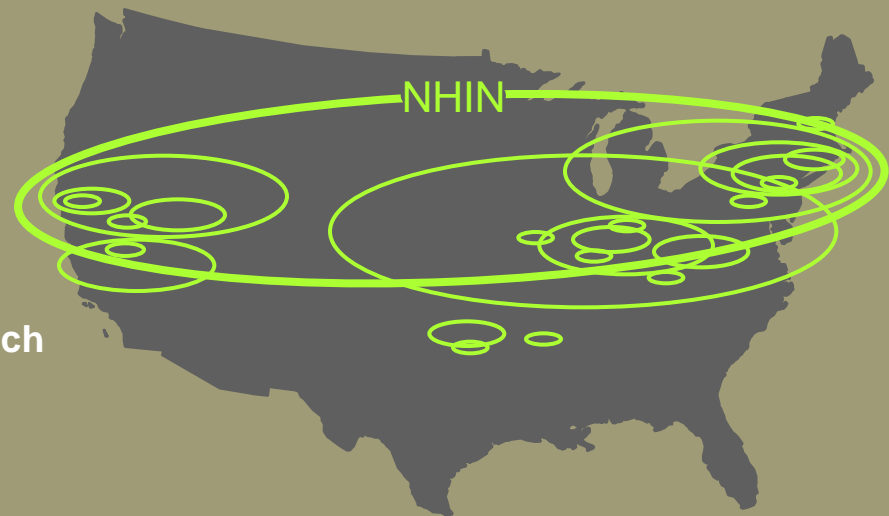
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Benefits of Our Approach

- Recognizes and handles diversity in subnetwork organizations
- Low barrier, easy to get on the network
 - Low initial costs
 - Easy to ramp up later
- Like the Internet, requires no “top-level” operator or control
- Implements a common set of privacy policies across the network
 - Built on lines of actual human trust
 - No nationwide query
 - Queries are targeted and authorized among trusted parties (no “fishing”)
- Practical, operational approach
 - Standards are already in widespread use



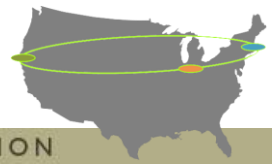


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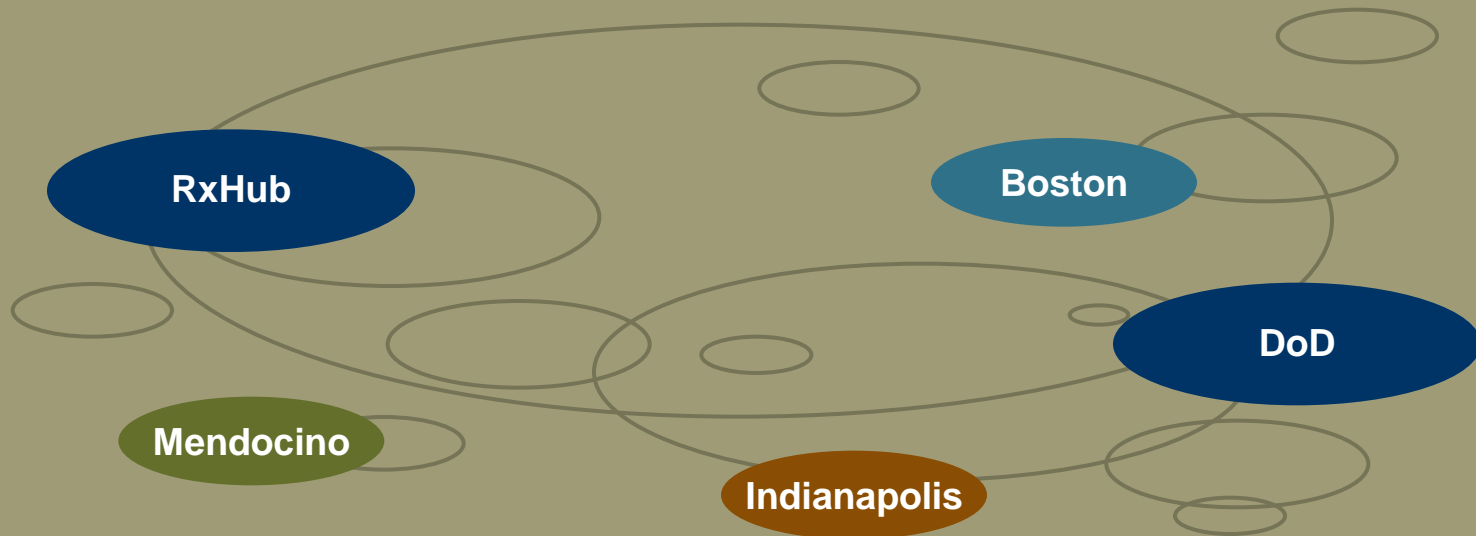
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TECHNICAL
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Whether Regional or Non-Geographic, Each SNO Is Unique

- Business model
- Technical architecture and set of services
- Participating enterprises
- Regulatory environment
- Healthcare market influences



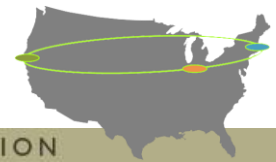


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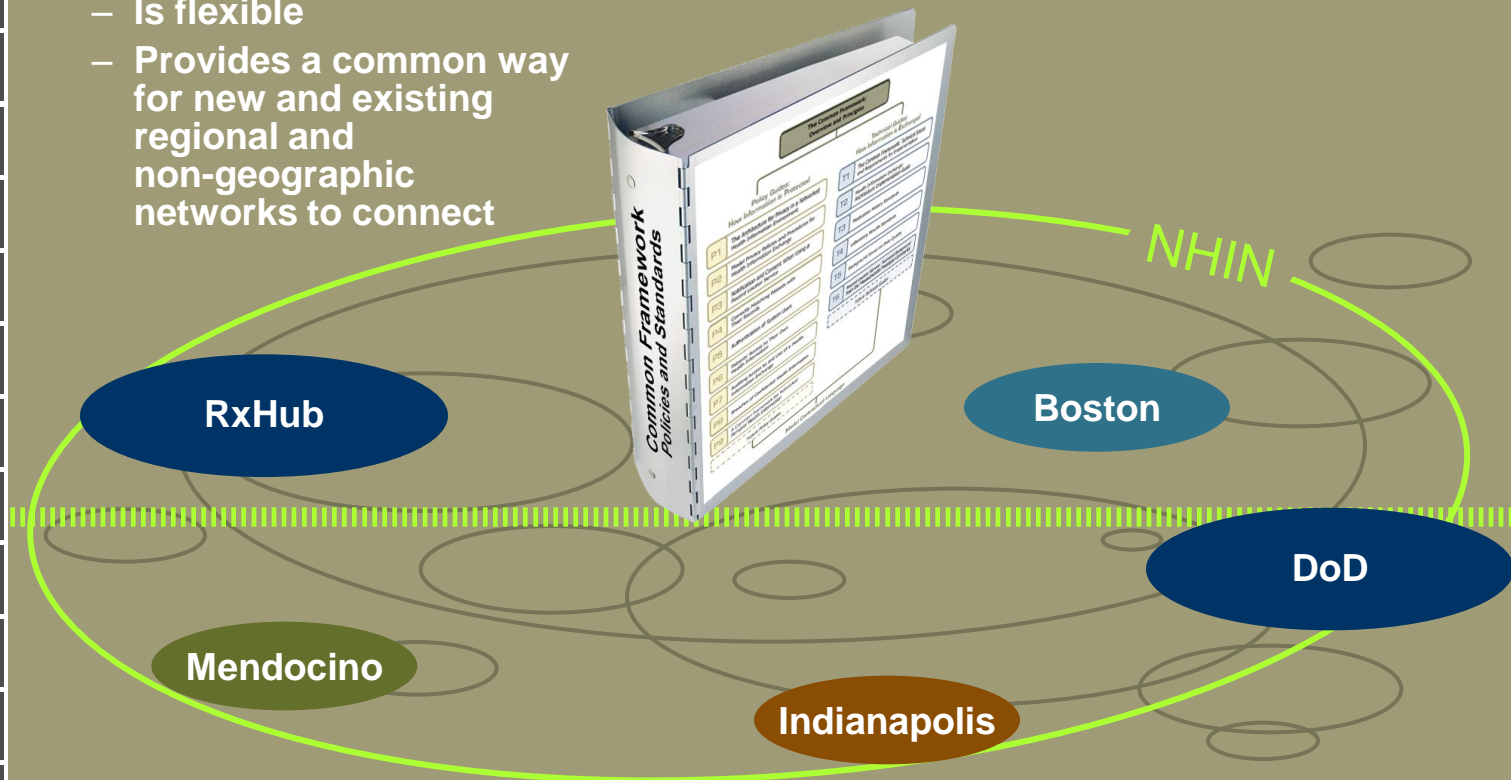
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TECHNICAL ARCHITECTURE

Our Approach Accommodates Today's Diversity

- Regardless of unique SNO features, strategies, and business models
- Regardless of each network's underlying technology and applications
- The Common Framework:
 - Accommodates more stringent information policies if desired
 - Leaves implementation decisions in the hands of the SNOs
 - Is flexible
 - Provides a common way for new and existing regional and non-geographic networks to connect



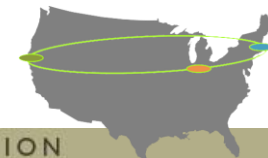


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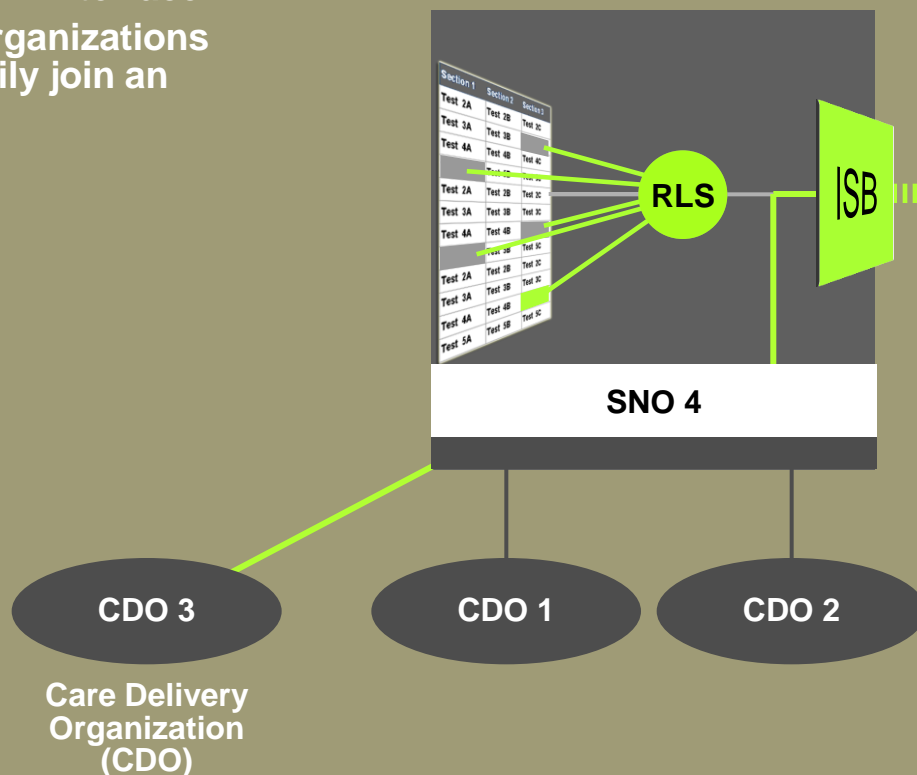
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TECHNICAL ARCHITECTURE

Participation Is Easy — Low Barrier to Entry

- Most existing SNOs already have a index or RLS
- Inter-SNO bridge can be developed or purchased from a third party to provide a NHIN interface
- Care delivery organizations (CDOs) can easily join an existing SNO



Secure Internet

The Common Framework



Inter-SNO Bridge



Gateway



Data Repository



Record Exchange Service



Record Locator Service

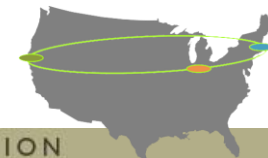


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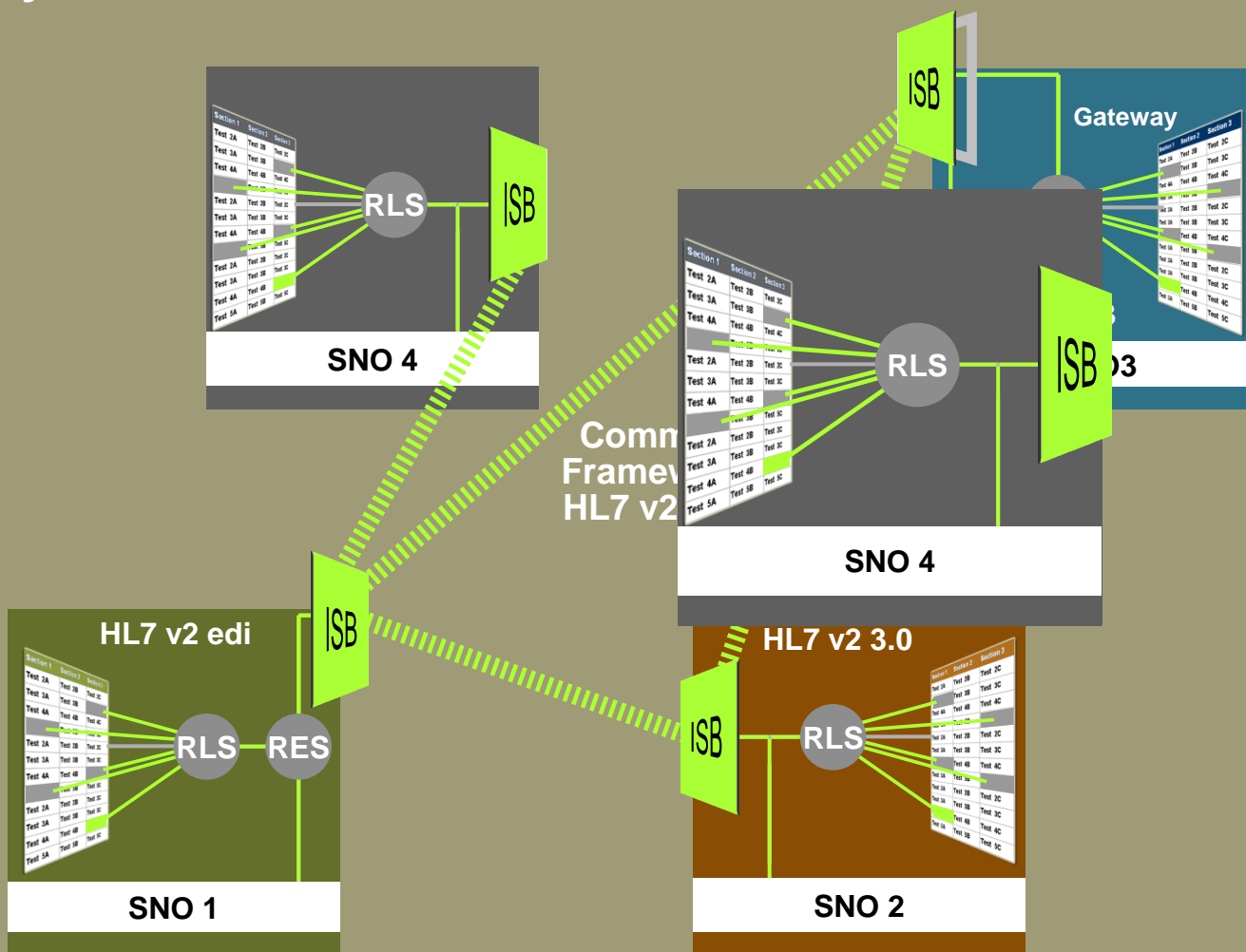
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Once in a SNO, Organizations Have Easy Access Beyond Their SNO's Boundaries



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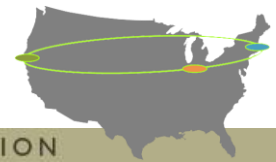


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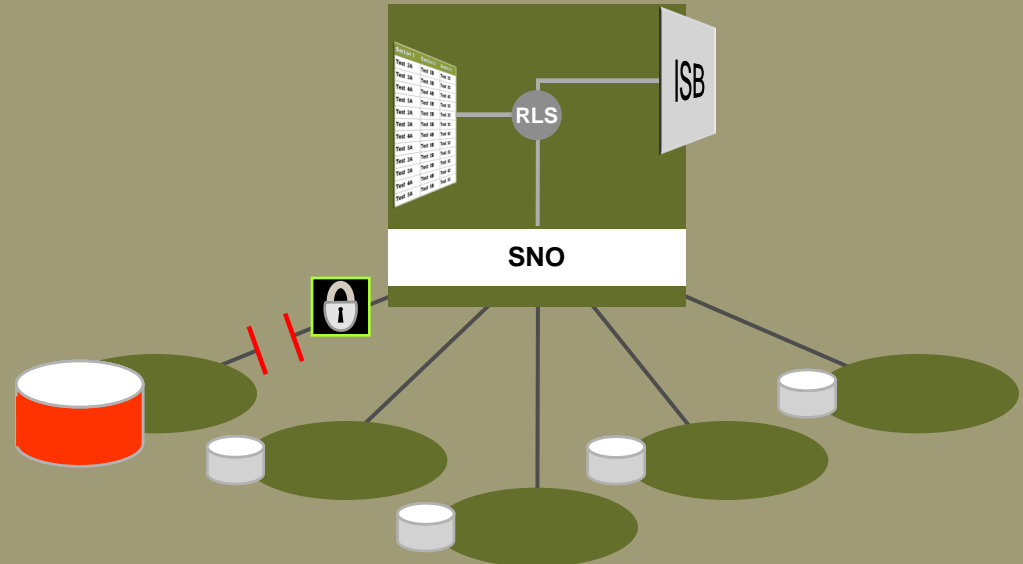
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TECHNICAL ARCHITECTURE

Policy-Driven Architecture

- No central repositories
 - Clinical and identity information maintained and secured at network edge
- ISB handles authorized exchange of patient data with other SNOs
- RLS maintains index to clinical data, not the data itself
 - Index only; NO clinical data
 - Clinical data is secured at participating organizations
 - Breaches are contained locally



Secure Internet Framework

The Common Framework



Inter-SNO Bridge



Gateway



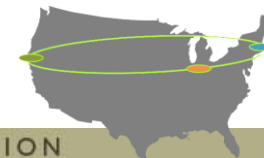
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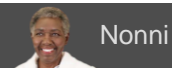
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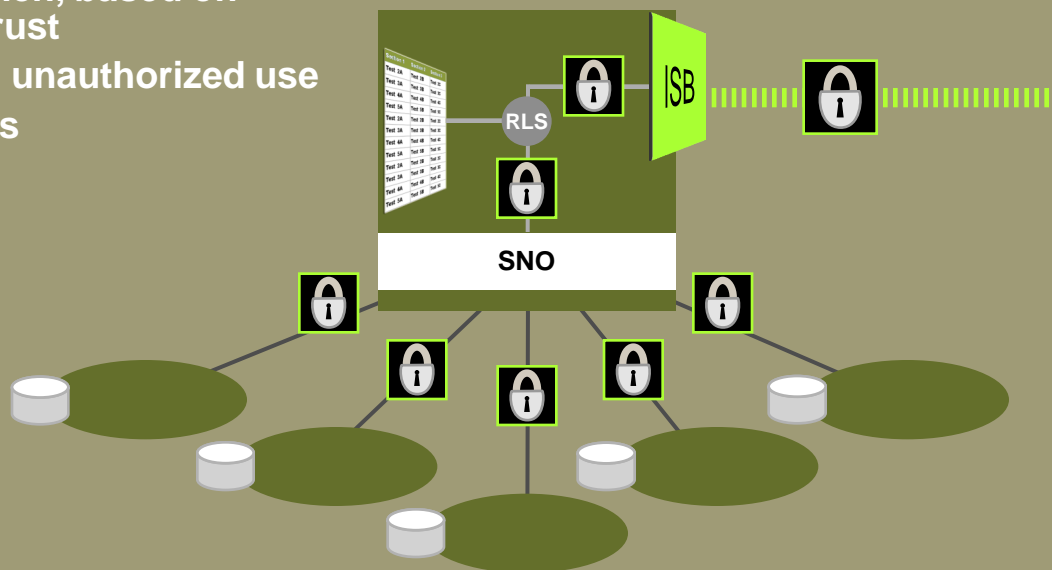
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Privacy is Built on Lines of Human Trust

- No central repositories
 - Clinical and identity information maintained and secured at network edge
- ISB handles authorized exchange of patient data with other SNOs
- RLS maintains index to clinical data, not the data itself
 - Index only; NO clinical data
 - Clinical data is secured at participating organizations
 - Breaches are contained locally
- Patients and providers decide what data is shared and when, based on established lines of trust
- Data is secured from unauthorized use
- No nationwide queries



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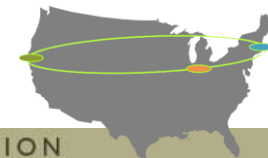
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Privacy Is Maintained Even as Information is Shared

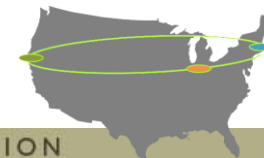
- Reporting to public health agencies is de-identified or done with a pseudonym depending on what is authorized

Overview WR=13											
TID	A/SRm	Name	Flags	Chief Complaint	Rad	Lab	EKG	Gatt	Res	Nur	Disp
204	73	1	REF	BRBPR		L		906		cp	
636	58	2	Com	Dyspnea	XNC	L		505 Anders	PChan	CCarkin	R v
813	75	3	Com	s/p Fall	XC	L		806 Anders	melissa	maureen	R v
336	84	4	Com	CP	X	L		1006Anders	melissa	maureen	R v
558	46	5	ComREF	Neuro Cva	MC	L		1106Anders	Baumer	Diane	
307	82	6	72REF	Lab Check		L		1004		cp	
227	84	7	RnREF	HypoTN	X	LB		1206Anders	PChan	col M	
138	71	8		CP				606		Diane	
24	79	9	REF	s/p Syncope						Diane	
312	82	10		CP Heaviness	X	L		1206 Kelly	CLanoue	CCarkin	
520	55	11	Com	CP		L		706 Anders	PChan	col M	
414	70	12	ComREF	Dyspnea	XC	L		1005Anders	melissa	CCarkin	
		14									
103	45	15	REF	s/p CP	X	L		299		CCarkin	
141	46	16	ComREF	Chest Pain	X	L			Anders	Baumer	col M
11	2389	H-1	Com	Rt Side Rib Pain	XC	L		903 McOit	melissa	Diane	
513	59	H-1	REF	Abnl Labs	U	L		802 Anders	ChrisMc	CCarkin	
535	23	H-1		Abd Pain		L			Anders	ChrisMc	maureen
246	75	H-2		Htn				1198		cp	
626	75	H-3	Com	Difficulty Ambulatin	X	L		405 Anders	Baumer	col M	D
837	37	H-6	Com	Requesting	X	L		1106Anders	Baumer	Diane	R v

Randomized Data Linker

Pseudonym:
74639205756976209

Hospital Medical Record
Account Number
Chief Complaint
ED Arrival Date
ED Arrival Time
ED Discharge Date
ED Discharge time
Admit Date
Admit Time
Birth Date
Address
City, State/Province
Country
Gender
Disposition
ICD9



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Practical Operational Approach

- Uses open, existing standards
- Leverages existing network and IT investments
- Vendor and platform neutral
- Promotes widespread adoption
- Provides platform for innovation

Development Standards Supported:



ICD-9-CM

CPRI-HOST



HL7 Standards

- Data Models
- Version 3.0
- Version 2.5
- Version 2.4
- Version 2.3.1
- Version 2.3
- Clinical Context Object Workgroup (CCOW) Specifications
- Arden Syntax
- Clinical Document Architecture (CDA)
- HL7 Informative Documents
- HL7 Administrative Documents

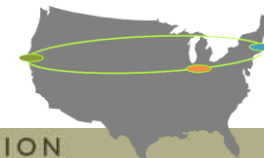


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CONNECTING FOR HEALTHSM

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NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE PRESENTATION

Use Cases

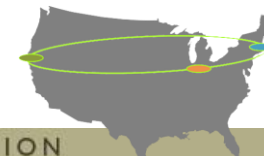


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Consumer Empowerment

Feature

Patients verify and maintain their demographic information and have access to medical history

Benefit

Electronic “clipboard” follows consumer and informs clinicians



Electronic Health Record

Providers access and update clinical information; share authorized lab results and interpretations

Improves patient care and reduces redundant testing



Biosurveillance

Public health agencies receive authorized reports of emergency room and lab data

Integrates monitoring with delivery of care



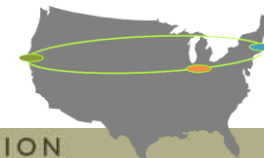


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Healthcare Markets

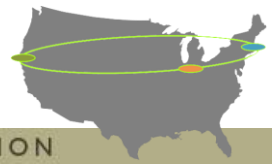


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Our Healthcare Markets

- Geographically dispersed
- Demographically and technically diverse
- Good test-beds for a flexible solution



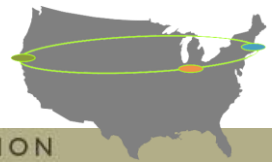


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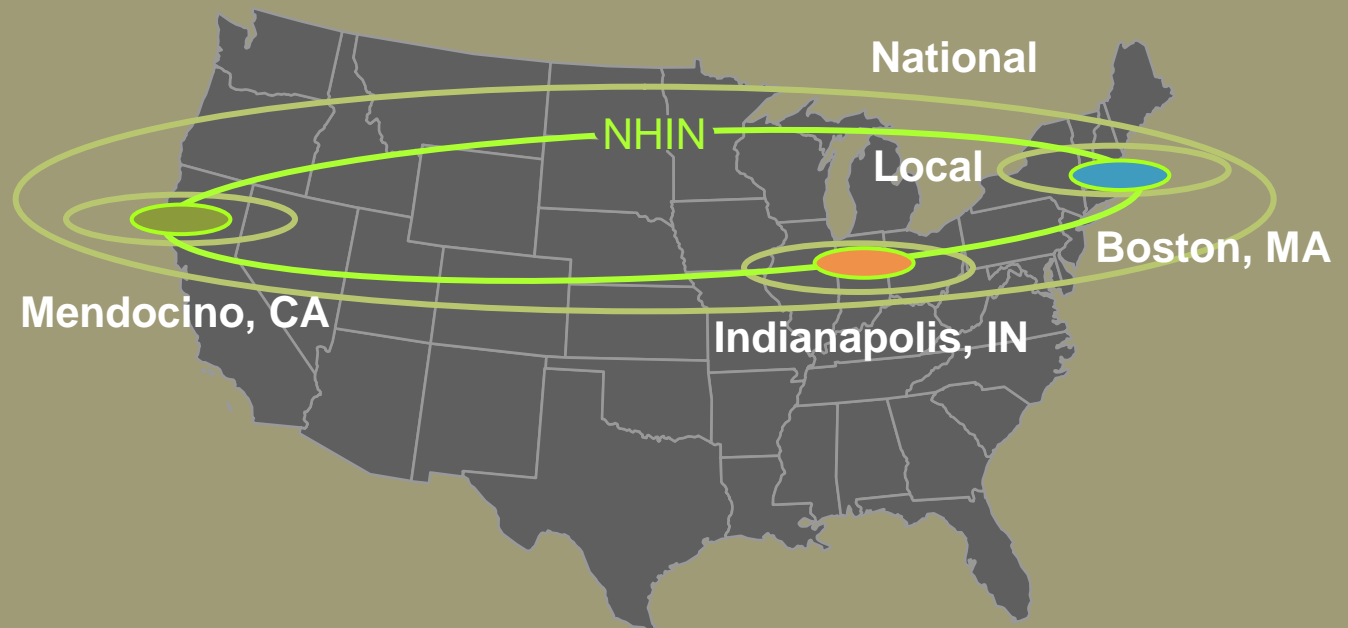
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Our Model Reaches Beyond Our Regional Health Networks

- Subnetwork organizations (SNOs) and data exchanges
- Local public health agencies
- Non-geographic networks
 - Centers for Disease Control and Prevention (CDC)
 - RxHub



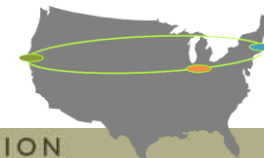


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MENDOCINO
california



- Median family income is 26% below California average (2003)
- Population: 88,000
- Health Records Exchange (HRE) brings together isolated communities
- Providers supported
 - Hospitals
 - Physician offices
 - Community clinics
 - County public health department



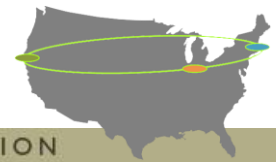


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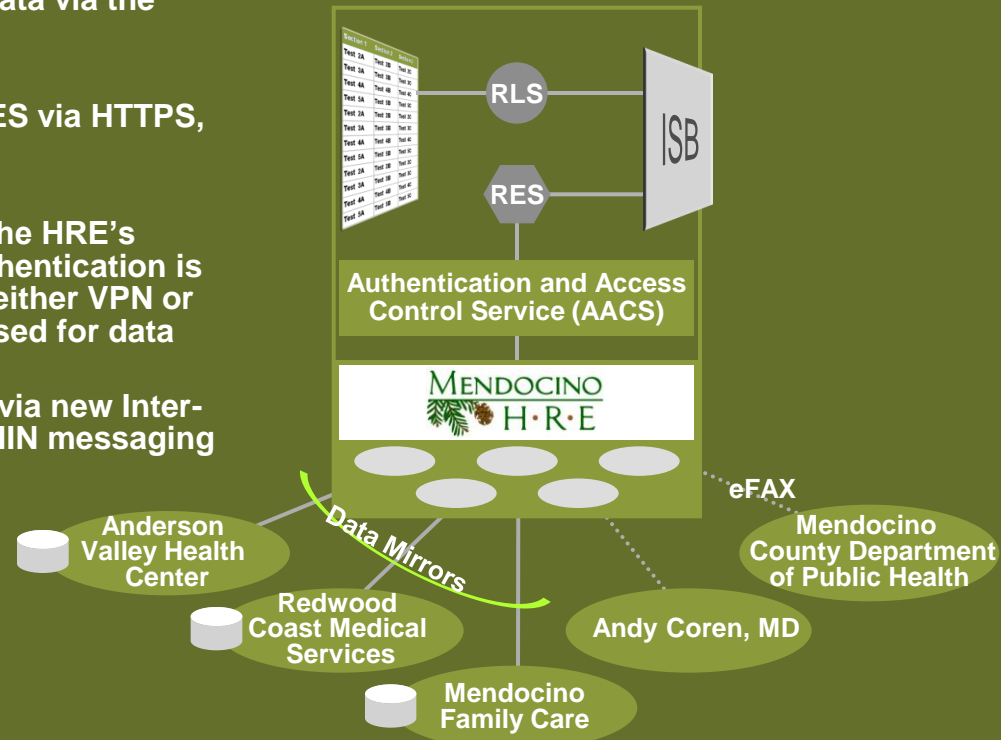
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Mendocino Health Records Exchange

- Enterprises replicate data into mirrored data sets at the HRE for access by Record Locator Service (RLS) and Record Exchange Service (RES)
- Enterprises do not connect directly with each other but exchange data via the HRE
- Intra-SNO security
 - Connects to the HRE/RES via HTTPS, SFTP, and VPN
- Intra-SNO data flow
 - SNO is encrypted with the HRE's certificate. Separate authentication is used for sessions, and either VPN or dedicated circuits are used for data pipes
- Inter-SNO communication via new Inter-SNO Bridge (ISB) using NHIN messaging standards



Secure Internet

The Common Framework



Inter-SNO Bridge



Gateway



Data Repository



Record Exchange Service



Record Locator Service

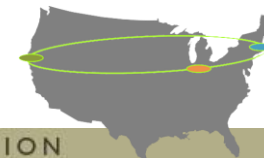


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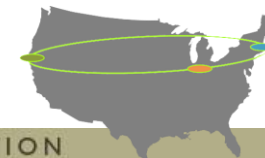
TECHNICAL
ARCHITECTURE

INDIANAPOLIS Indiana



- **Indianapolis is an area with suburban population density**
- **Population: 1,900,000**
- **IHIE is a nonprofit focused on “wiring” healthcare for Indiana**
- **Providers supported**
 - Hospitals
 - Physician offices
 - Community health centers
 - Independent labs
 - Public health agencies





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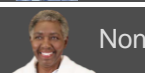
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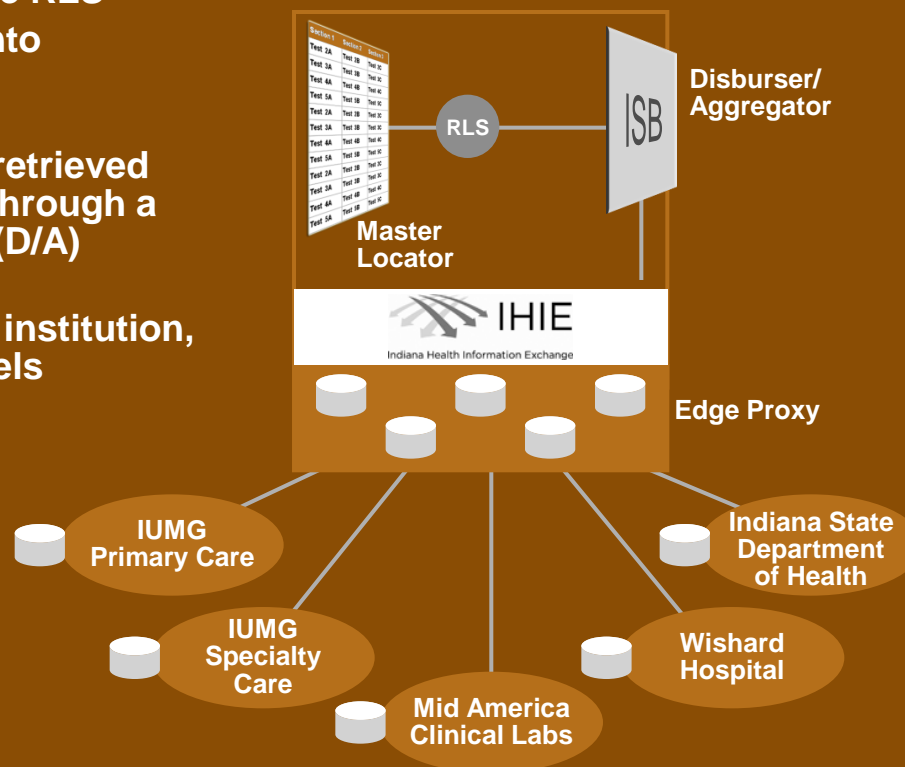
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Indiana Health Information Exchange

- Publish patient registration (but not clinical data) into the RLS
- Transmit clinical data into centrally managed data repositories
- Integrated patient data retrieved from data repositories through a Disburser/Aggregator (D/A) service in the ISB
- Data is protected at the institution, patient, and service levels



Secure Internet



The Common Framework



Inter-SNO Bridge



Gateway



Data Repository



RES SNO Registry



RLS Record Locator Service

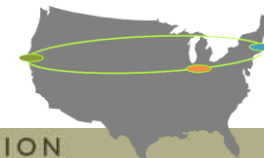


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ARCHITECTURE

BOSTON
Massachusetts



MA-SHARE

- **Boston is an area with high population density**
- **Population: 4,000,000**
- **MA-SHARE designed to support statewide clinical data exchange**
- **Providers supported**
 - **Hospitals**
 - **Physician offices**
 - **Community health centers**
 - **Pharmacies**
 - **Public health agencies**



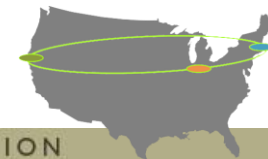


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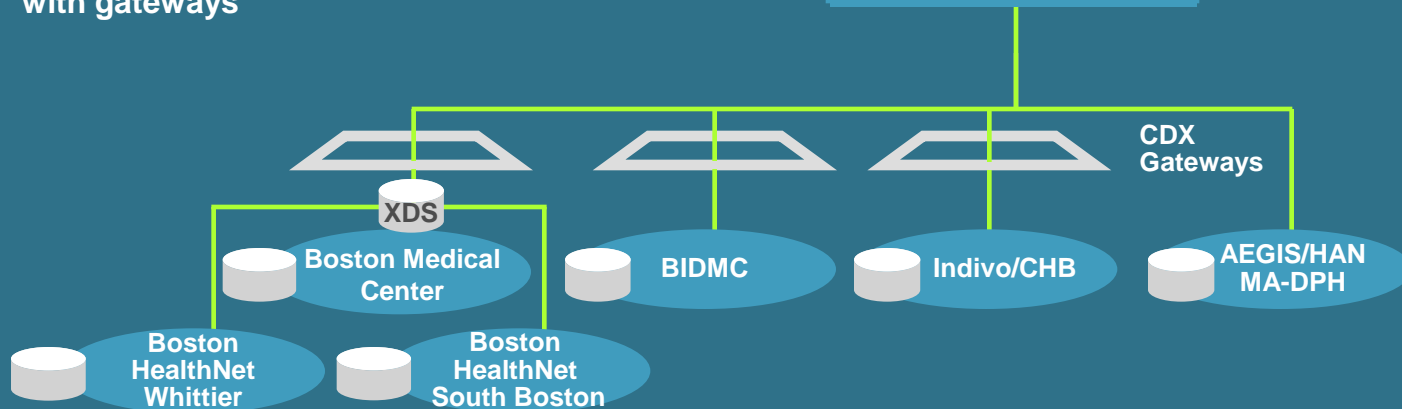
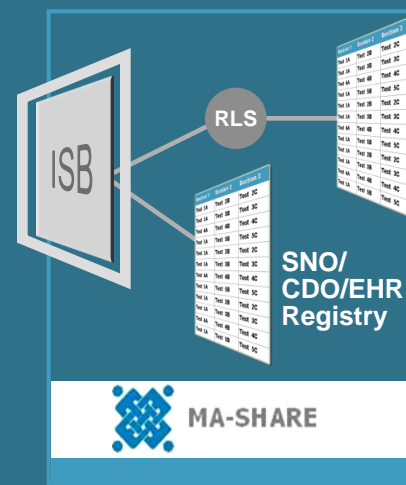
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TECHNICAL ARCHITECTURE

MA-SHARE Enterprises

- Publish patient registration (but not clinical data) into the MA-SHARE RLS
- Enterprises with gateways can:
 - Consume Web services, expose local data as Web services, orchestrate messages, etc.
 - Connect directly to each other (peer to peer) to retrieve clinical data
- Enterprises without gateways (e.g., AEGIS for public health) can use the MA-SHARE gateway to connect with other enterprises (hub-spoke)
- Inter-SNO Bridge is “just another gateway”
- Intra-SNO security follows NHIN standards (certificates exchange) between enterprises with gateways



Secure Internet

The Common Framework



Inter-SNO Bridge



Gateway



Data Repository



Record Exchange Service



Record Locator Service

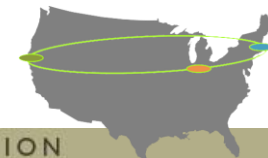


EXPERIENCE. **RESULTS.**







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NATIONWIDE HEALTH INFORMATION NETWORK PROTOTYPE PRESENTATION

INTRODUCTION		Mendocino	Indianapolis	Boston
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Consumer Empowerment	Market Characteristics	Low density, rural and underserved	Urban / suburban, mid-density	Urban, high density of healthcare services
Electronic Health Record	SNO	New, grant-funded collaborations	Urban / suburban, mid-density	Urban, high density of healthcare services
Biosurveillance				
HEALTHCARE MARKETS	Network Topology	Hub and spoke	Hub and spoke	Peer to peer
OUR PATIENTS	Internal Messaging	HL 7 v2.4	HL7 v2.4	HL7 v3.0 RIM
 T.J.				
 Dan				
 Nonni				
SPECIAL FEATURES	Data Storage	Data mirrored at the SNO in native format to improve service and availability	Data centrally managed by the SNO in native format	Data resides at participants (except RLS index)
STRENGTHS OF OUR APPROACH				
DISCUSSION				
TECHNICAL ARCHITECTURE	Technology	Open Source, mixed code base	Commercial and Open Source, Java	Microsoft .NET

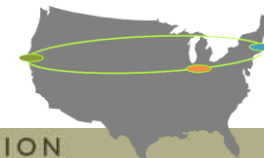


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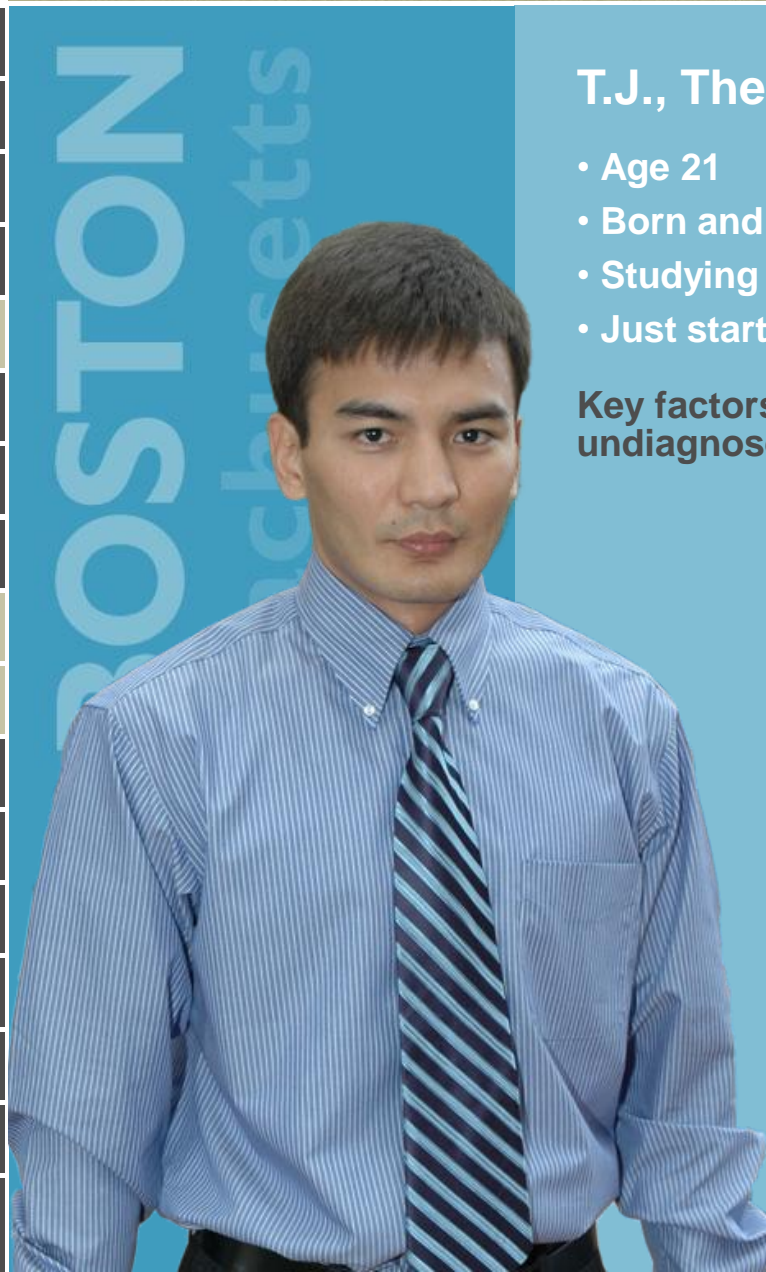
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TECHNICAL
ARCHITECTURE



T.J., The Recent College Graduate

- Age 21
- Born and raised in Mendocino County, CA
- Studying in a college in the Boston area
- Just starting an internship in Indianapolis

Key factors: T.J. has moved frequently and has an undiagnosed condition

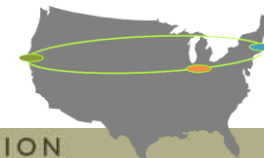


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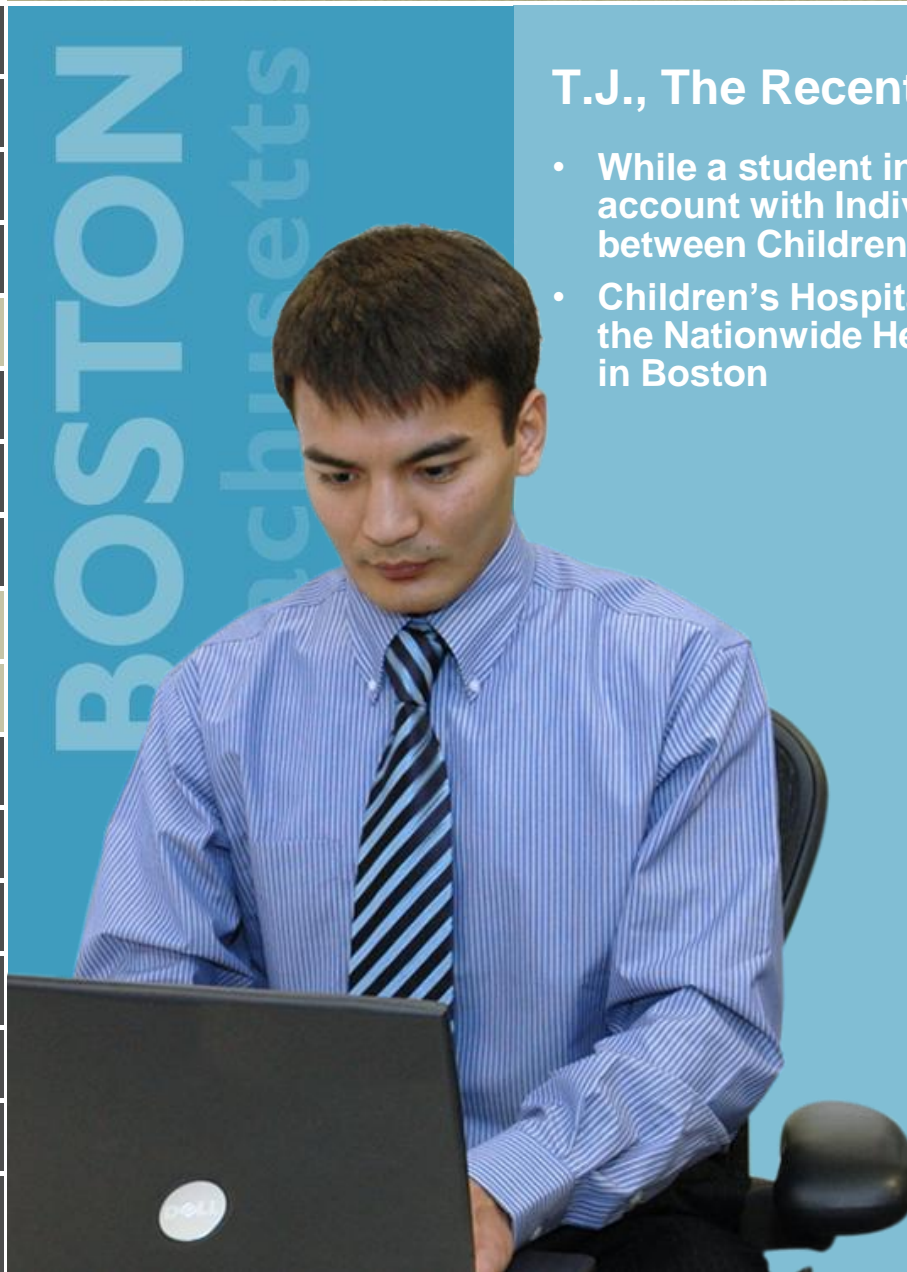
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T.J., The Recent College Graduate

- While a student in Boston, T.J. set up a PHR account with IndivoHealth, a collaboration between Children's Hospital, Harvard, and MIT
- Children's Hospital participates in MA-SHARE, the Nationwide Health Information Network SNO in Boston



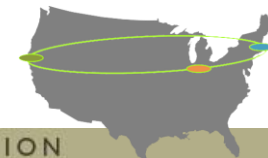


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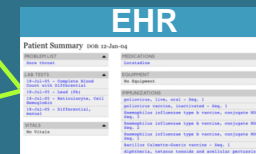
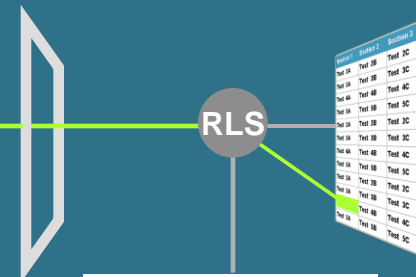
TECHNICAL ARCHITECTURE

Populate a New PHR with EHR data

1. Care provider recommends IndivoHealth PHR to patient
2. Provider's office verifies patient identity and creates account
3. Patient accesses IndivoHealth Web site and configures account
4. Indivo queries EHRs for clinical data as requested by patient
5. Patient annotates and updates record
6. Patient consents to make PHR available to authorized clinicians



Phkqtkb	lgtgl	weqw	mcnstth	werwe
Lheaiyhrb	ghn	fsg	Erqt	Oyoyt
Uyfgndyh	56787	dfiga	agkrlw	Ulisnjw
Phkqtkb	lgtgl	weqw	mcnstth	werwe
Lheaiyhrb	ghn	fsg	Erqt	Oyoyt
Uyfgndyh	56787	dfiga	agkrlw	Ulisnjw
Phkqtkb	lgtgl	weqw	mcnstth	werwe
Lheaiyhrb	ghn	fsg	Erqt	Oyoyt
Uyfgndyh	56787	dfiga	agkrlw	Ulisnjw



Your Account

Patient Identification

Required Data:

Name:

Gender: ☒ Male ☐ Female

DOB: / / / /

Zip Code:

Social Security ID:

Your New Account

Patient Identification

Required Data:

Name:

Gender: ☒ Male ☐ Female

DOB: / / / /

Zip Code:

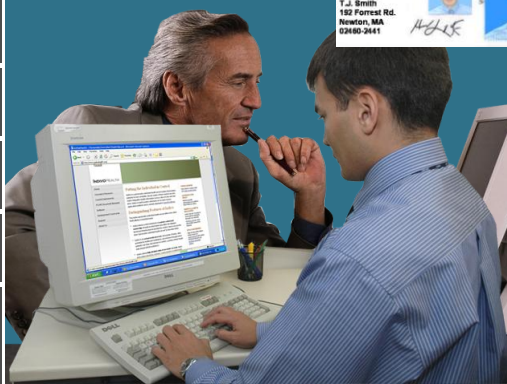
Social Security ID:

SECURE LOGIN

YOU HAVE BEEN LOGGED OUT.

Username:

Password:



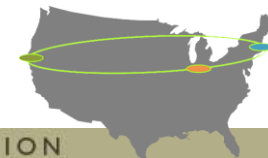


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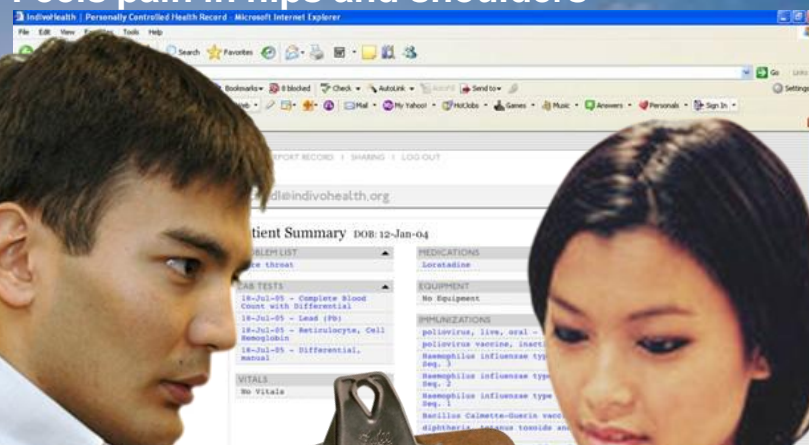
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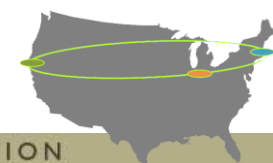
TECHNICAL
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INDIANAPOLIS
Indiana

T.J. Brought to Wishard Emergency Department (ED)

- Can't catch his breath
- Feels pain in hips and shoulders





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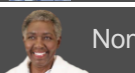
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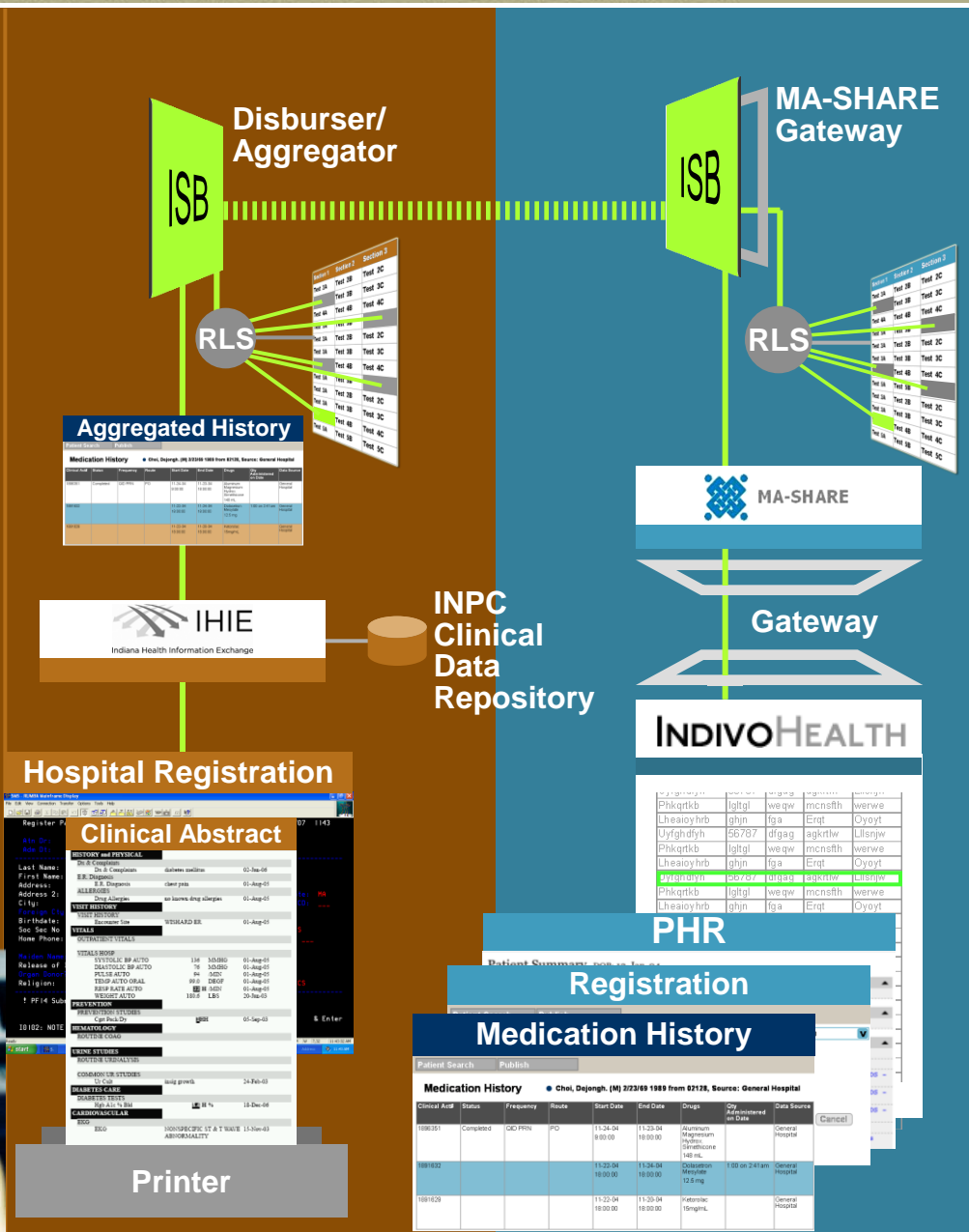
TECHNICAL ARCHITECTURE

Clipboard Data Retrieved from PHR

1. Registration triggers ADT message to IHIE
2. Publish and lookup for local data
3. Based on patient informing registrar of health records in Boston, lookup query sent to MA-SHARE
4. Return found IndivoHealth data
5. Retrieve and aggregate patient data
6. Registration, insurance, medical history in clinical abstract printout (identified as sourced from PHR)



Wishard ED



Disburser/
Aggregator



RLS

Aggregated History

Medication History	Start Date	End Date	Frequency	Route	Start Date	End Date	Frequency	Route
Aspirin	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Aluminum Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Calcium Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO



IHIE
Indiana Health Information Exchange

INPC
Clinical
Data
Repository

MA-SHARE
Gateway



Gateway

INDIVOHEALTH

Phikqtkb	lgltgl	weqwg	mcnsth	werwe
Lheaiyhrb	ghyn	fga	Erqt	Oyoyt
Uyfgdlyh	56787	dfgag	agkthw	Ulsnjw
Phikqtkb	lgltgl	weqwg	mcnsth	werwe
Lheaiyhrb	ghyn	fga	Erqt	Oyoyt
Uyfgdlyh	56787	dfgag	agkthw	Ulsnjw
Lheaiyhrb	ghyn	fga	Erqt	Oyoyt

PHR

Registration

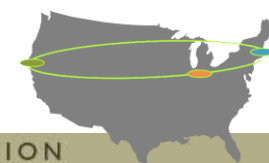
Medication History

Medication History	Start Date	End Date	Frequency	Route	Start Date	End Date	Frequency	Route
Aspirin	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Aluminum Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Calcium Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO

Printer

Clinical Abstract

Medication History	Start Date	End Date	Frequency	Route	Start Date	End Date	Frequency	Route
Aspirin	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Aluminum Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO
Calcium Hydroxide	11-23-04	11-23-04	10:00:00	PO	11-23-04	11-23-04	10:00:00	PO



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Medication History Retrieved from RxHub

1. Emergency Department (ED) triggers ADT message
2. Sends lookup query to RxHub
3. RxHub RLS looks up patient and queries and retrieves medication history from remote Pharmacy Benefit Managers (PBMs)
4. Aggregates medication history
5. Medication history in clinical abstract printout in ED

Wishard ED



Disburser/
Aggregator

ISB

RLS

Medication History

Chel, Dejahng, (M) 272185 1989 from 82178, Source: General Hospital

Medication	Frequency	Route	Start Date	End Date	Drugs	Qty	Refill	Source
Aluminum Hydroxide	100 mg	PO	11-23-04	11-23-04	Aluminum Hydroxide	100 mg	240 per	General Hospital
Metoprolol	50 mg	PO	11-23-04	11-23-04	Metoprolol	50 mg	240 per	General Hospital
Warfarin	5 mg	PO	11-23-04	11-23-04	Warfarin	5 mg	240 per	General Hospital



INPC
Clinical
Data
Repository

Rx Hub

Medication	Frequency	Route	Start Date	End Date	Drugs	Qty	Refill	Source
Aluminum Hydroxide	100 mg	PO	11-23-04	11-23-04	Aluminum Hydroxide	100 mg	240 per	General Hospital
Metoprolol	50 mg	PO	11-23-04	11-23-04	Metoprolol	50 mg	240 per	General Hospital
Warfarin	5 mg	PO	11-23-04	11-23-04	Warfarin	5 mg	240 per	General Hospital

PBMs

Medication History

Chel, Dejahng, (M) 272185 1989 from 82178, Source: General Hospital

Medication	Frequency	Route	Start Date	End Date	Drugs	Qty	Refill	Source
Aluminum Hydroxide	100 mg	PO	11-23-04	11-23-04	Aluminum Hydroxide	100 mg	240 per	General Hospital
Metoprolol	50 mg	PO	11-23-04	11-23-04	Metoprolol	50 mg	240 per	General Hospital
Warfarin	5 mg	PO	11-23-04	11-23-04	Warfarin	5 mg	240 per	General Hospital

Hospital Registration

Register Patient

First Name: JONHON
Last Name: JONHON
Address: 2345 JONES AVE
City: BOSTON
State: MA
Zip: 02108
Birthdate: 08 / 11 / 1985
Sex: M
Age: 23
Height: 5'10"
Weight: 180 lbs
Blood Type: O+
Religion: UCA
Release of Info: Yes
Signature: [Signature]
Date: 01/19/07

Clinical Abstract

CHIEF COMPLAINT: [Text]

HISTORY and PHYSICAL

REVIEW of SYSTEMS

LABORATORY

IMAGING

PHYSICIAN

PHARMACOLOGY

DIAGNOSIS

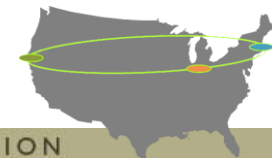
PLAN

DISPOSITION

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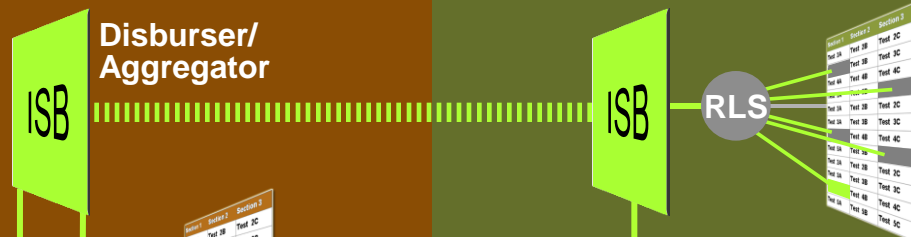
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Lab Results Retrieval

1. Wishard ED registration triggers ADT message
2. Publish and lookup for local data
3. Send lookup query to Mendocino HRE ISB
4. RLS identifies location of results in Mendocino HRE
5. ISB queries RLS and returns Mendocino lab documents
6. Retrieve results from Mendocino HRE
7. Lab values in clinical abstract printout in ED



INPC Clinical Data Repository

Hospital Registration

Overview VRE13

TO A/Srm	Name	Flags	Chief Complaint	Rad	Lab/Exam	Res	Nur	Disp
204-72	1	REF	605 Anders	CCalder	R+			
636-59	2	Com	Dyspnea	CCalder	R+			
613-75	3	Com	sp Fall	CCalder	R+			
338-84	4	Com	CP	CCalder	R+			
538-46	5	Com	CP	CCalder	R+			
387-42	6	Com	CP	CCalder	R+			
227-44	7	Com	CP	CCalder	R+			
138-71	8	Com	CP	CCalder	R+			
36	9	Com	CP	CCalder	R+			
712-42	10	Com	CP	CCalder	R+			
638-55	11	Com	CP	CCalder	R+			
414-70	12	Com	CP	CCalder	R+			
141	13	Com	CP	CCalder	R+			
183-45	14	Com	CP	CCalder	R+			
141-45	15	Com	CP	CCalder	R+			
112003	16	Com	CP	CCalder	R+			
613-58	17	Com	CP	CCalder	R+			
638-23	18	Com	CP	CCalder	R+			
638-75	19	Com	CP	CCalder	R+			
638-75	20	Com	CP	CCalder	R+			
638-75	21	Com	CP	CCalder	R+			
638-75	22	Com	CP	CCalder	R+			
638-75	23	Com	CP	CCalder	R+			
638-75	24	Com	CP	CCalder	R+			
638-75	25	Com	CP	CCalder	R+			

Clinical Abstract

History and Physical

Vitals

History

Physical

Diagnosis

Medication

Prognosis

Disposition

Wishard ED

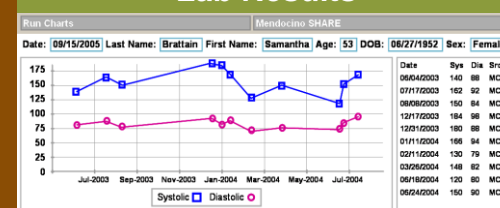


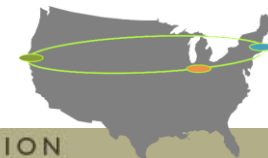
Printer

MENDOCINO HEALTH RECORDS EXCHANGE

Phkqtkrb	lgltgl	weqw	mcnsfth	werwe
Lheaiayhrb	ghjn	fga	Ert	Ooyrt
Uyfgdhfhy	56787	dfgag	agkrlw	Llslngw
Phkqtkrb	lgltgl	weqw	mcnsfth	werwe
Lheaiayhrb	ghjn	fga	Ert	Ooyrt
Lheaiayhrb	ghjn	fga	Ert	Ooyrt
Uyfgdhfhy	56787	dfgag	agkrlw	Llslngw
Phkqtkrb	lgltgl	weqw	mcnsfth	werwe
Lheaiayhrb	ghjn	fga	Ert	Ooyrt
Uyfgdhfhy	56787	dfgag	agkrlw	Llslngw
Phkqtkrb	lgltgl	weqw	mcnsfth	werwe
Lheaiayhrb	ghjn	fga	Ert	Ooyrt
Uyfgdhfhy	56787	dfgag	agkrlw	Llslngw
Phkqtkrb	lgltgl	weqw	mcnsfth	werwe
Lheaiayhrb	ghjn	fga	Ert	Ooyrt

Lab Results





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Health Data Safely Shared with Regional and National Authorities

1. The completion of T.J.'s registration at Wishard triggers an ADT message
2. The data is de-identified and sent to the Indiana State Department of Health ESSENCE system
3. The Indiana Department of Health forwards data to the CDC using BioSense

ISB

Disburser/
Aggregator

Result Filter

Phikqtkb	lqtlgl	wegw	mcnoth	werwe
Lheaoymb	ghyn	fga	Erqt	Oyoyt
Uyfgdhlyh	56787	dtgag	agknlw	Ullsnw
Phikqtkb	lqtlgl	wegw	mcnoth	werwe
Lheaoymb	ghyn	fga	Erqt	Oyoyt
Uyfgdhlyh	56787	dtgag	agknlw	Ullsnw
Phikqtkb	lqtlgl	wegw	mcnoth	werwe
Lheaoymb	ghyn	fga	Erqt	Oyoyt

IHIE
Indiana Health Information Exchange

Wishard ED

Hospital Registration

Register Patient

First Name: JOHNSON Middle Name: Suffix: 01/15/07 1143

Address: 2345 JONES AVE Zip Code: 01002 State: MA

City: BOSTON

Birth Date: 01/11/1985 Mother's First Name: NOT KNOWN

Sex: M Race: T Marital Status: S

Other Phone Code: 000 Other Phone: 000 000

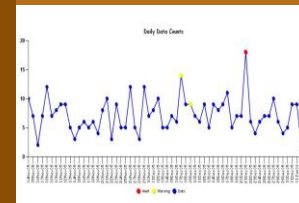
Release of Info: T Yes/No/Consent/Refused/Other

Religion: Other: OTHER CATHOLIC

PF14 Submenu PF15 DELETE HOME PHONE PF16 DELETE OTHER PHONE

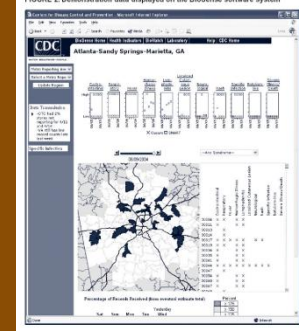
10102: NOTE DEFAULT VALUES ASSIGNED - PRESS ENTER

Indiana State Department of Health ESSENCE



CDC Biosense

FIGURE 2. Demonstration data displayed on the BioSense software system



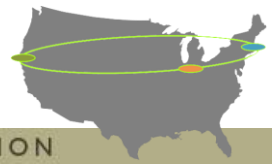


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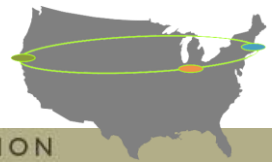


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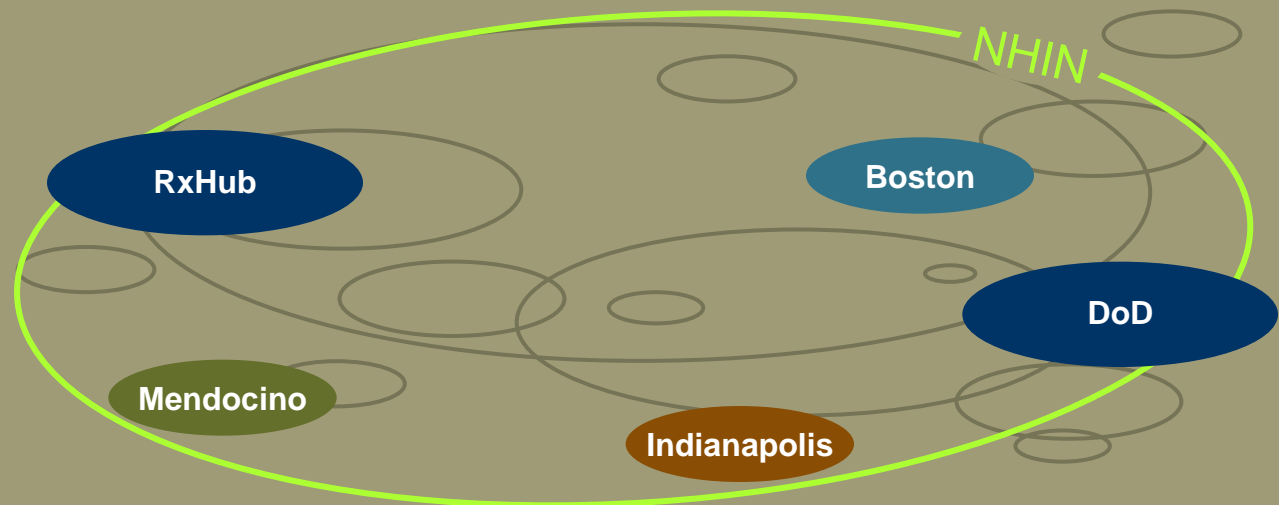
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Strengths of Our Approach

- A thin infrastructure for a federated “network of networks”
 - Flexible, scalable
 - Open, not proprietary
 - No national service provider (like the Internet)



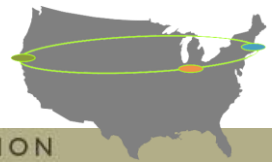


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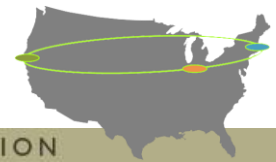


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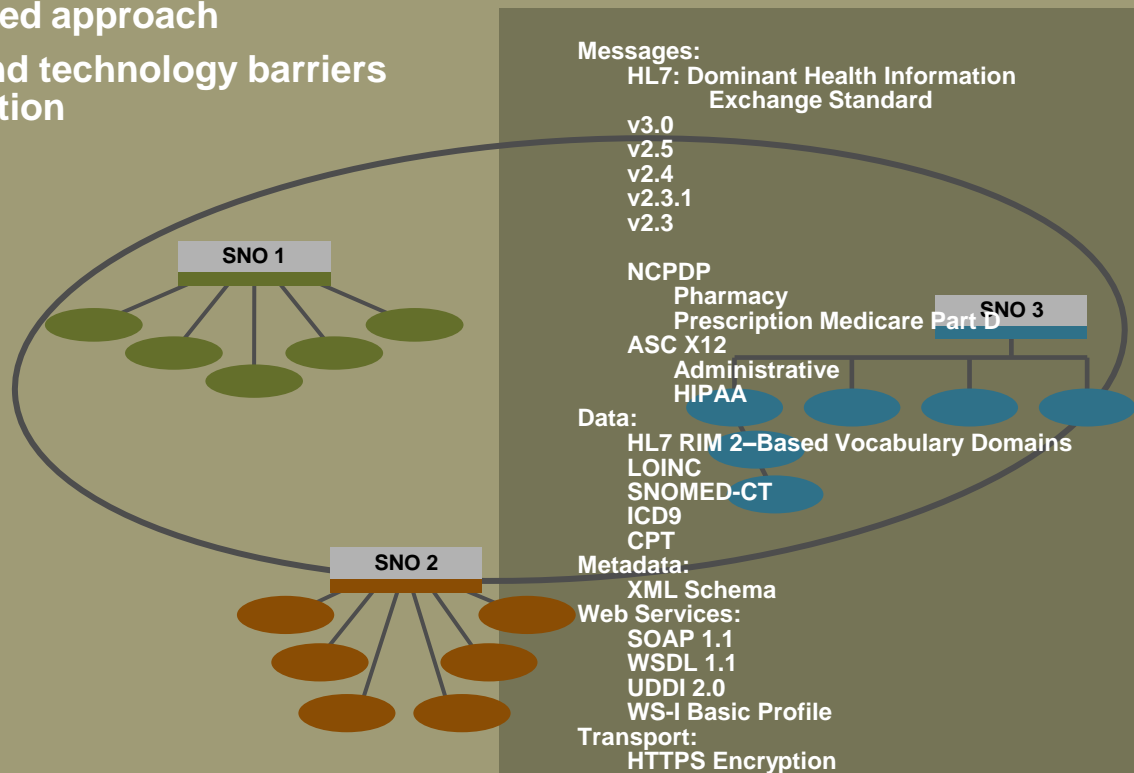
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 - Low cost and technology barriers for participation



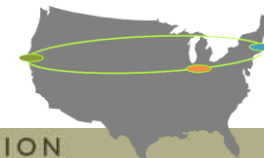


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 - Low cost and technology barriers for participation
- Neutral platform for innovation

Development Standards Supported:



ICD-9-CM

CPRI-HOST



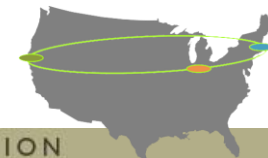


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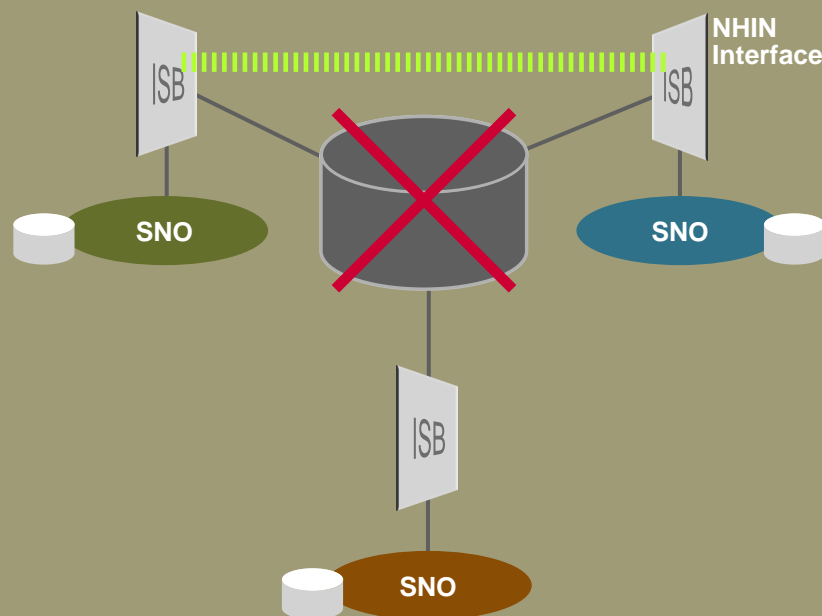
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 - Queries are targeted and authorized among trusted parties



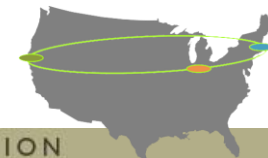


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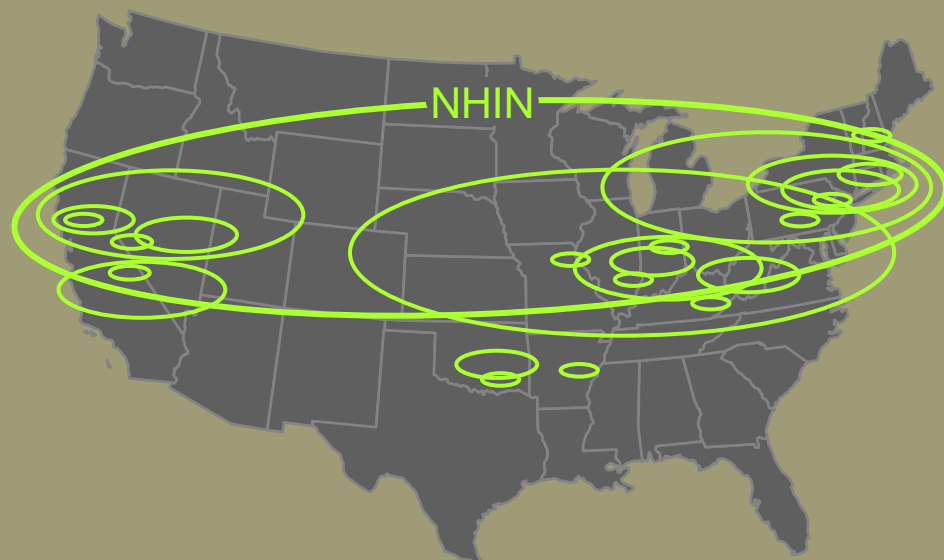
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- Standards-based approach
 - Low cost and technology barriers for participation
- Neutral platform for innovation
- Private and secure
 - No centralized data repositories
 - Queries are targeted and authorized among trusted parties
- Practical, operational
 - Focused on the network, not on applications
 - Standards are already in widespread use



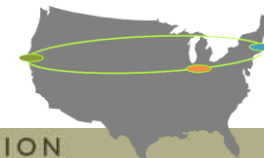


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